

Claims:

1. A thermoplastic polyolefin alloy having high (notched) Izod impact strength comprising a polypropylene block copolymer as a base polymer, an elastomer and a compatibilizer.
- 5 2. Polyolefin alloys as claimed in claim 1 exhibiting izod impact strength in the range: 60-90 kg. cm/cm, for notched specimens of thickness 3.2 mm, following the ASTM D256 test method using injection molded standard specimens.
- 10 3. Polyolefin alloy as claimed 1 and 2 wherein said polypropylene block copolymer is a block copolymer of propylene and ethylene.
4. Polyolefin alloy as claimed in any preceding claim wherein said elastomer is selected from a terpolymer made from ethylene propylene diene monomer (EPDM)/an ethylene propylene copolymer rubber (EPR).
- 15 5. Polyolefin alloy as claimed in any preceding claim wherein said compatibilizer is selected from a group of two different ionomers, styrene-ethylene/butylene-styrene block copolymer (SEBS), styrene-acrylonitrile copolymer (SAN) and polypropylene block copolymer grafted with maleic anhydride (PPBC-g-MAH).
- 20 6. Polyolefin alloy as claimed in any preceding claim wherein said polypropylene block copolymer is present in an amount of 50 to 95 wt % of said alloy.
7. Polyolefin alloy as claimed in any preceding claim wherein said elastomer is present in a concentration range of 5 to 50 wt %.
- 25 8. Polyolefin alloy as claimed in any preceding claim wherein said compatibilizer is present in an amount of from 5 to 30 wt %.
9. Polyolefin alloy as claimed in any preceding claim further including a natural filler.
10. Polyolefin alloy as claimed in claim 9 wherein said filler is selected from the group consisting of mica, talc and calcium carbonate.
- 30 11. Polyolefin alloy as claimed in claim 9 or 10 wherein said filler is present in the concentration range of from 0-10 wt %.
12. A thermoplastic polyolefin alloy having high (notched) Izod impact strength comprising a base polymer selected from a block copolymer of propylene and ethylene (PPBC) in the concentration range of 50 to 59 wt%; an

- elastomer comprising, a terpolymer made from ethylene propylene diene monomer (EPDM)/an ethylene propylene copolymer rubber (EPR) in the concentration range of 5-50 wt %; a compatibilizer selected from the group consisting of two different ionmers, styrene-ethylene/butylenes-styrene block copolymer (SEBS), styrene-acrylonitrile copolymer (SAN) and polypropylene block copolymer grafted with maleic anhydride (PPBC-g-MAH) in a concentration range of 5 to 30 wt % and natural filler selected from a group consisting of mica, talc and calcium carbonate in the concentration range of 0 to 10 wt %.
13. Polyolefin alloy as claimed in claim 12 when heated in differential, scanning calorimeter at a uniform heating rate of $10^{\circ}\text{C}/\text{min.}$ in nitrogen environment, exhibit 2 to 3 endothermic peaks in the range: $90-167^{\circ}\text{C.}$
14. Polyolefin alloy as claimed in claim 12 having exothermic major peak in the temperature range of $115-25^{\circ}\text{C}$ followed by a minor peak in the range of 113 to 125°C with total ΔH value in the range: 55 of 75 J/g, when heated in differential scanning calorimeter at a uniform heating rate of $10^{\circ}\text{C}/\text{min.}$ in nitrogen environment, up to 200°C and cooled after holding isothermally for 3 min.
15. Polyolefin alloy as claimed in claim 12 having melt flow indices in the range: $2-5$ g/10 min. when tested according to ASTM D1238 standard method using dried granules.
16. Polyolefin alloy as claimed in claim 12 having tensile strength in the range of 150 to 200 kg/cm² when tested according to ASTM D638, using injection molded test specimens.
17. Polyolefin alloy as claimed in claim 12 exhibiting tensile modulus in the range of $7,000$ to $8,000$ kg/cm², when tested according to ASTM D638, using injection molded test specimens.
18. Polyolefin alloy as claimed in claim 12 exhibiting flexural strength in the range of 160 to 200 kg/cm², when tested according to ASTM D790, using injection molded specimens.
19. Polyolefin alloy as claimed in claim 12 having flexural modulus in the range of $6,000$ to $8,000$ kg/cm², when tested according to ASTM D790, using injection molded specimens.

20. Polyolefin alloy as claimed in claim 12 having heat deflection temperature in the range of 60-70⁰C with 4.6 kgf stress when tested according to ASTM D648, using injection molded test specimens.
- 5 21. Polyolefin alloy as claimed in claim 12 exhibiting heat deflection temperature in the range: 45-55⁰C with 18.2 kgf stress when tested according to ASTM D648, using injection molded test specimens.
- 10 22. A process for the preparation of a thermoplastic polyolefin alloy having high (notched) Izod impact strength which comprises melt blending a polypropylene block copolymer, a terpolymer and a compatibilizer, with or without a natural filler.
23. A process as claimed in claim 22 wherein said melt blending is carried out in in a twin screw extruder or a Buss – co – kneader.
24. A process as claimed in claim 22 wherein said polypropylene block copolymer is a block copolymer of propylene and ethylene.
- 15 25. A process as claimed in any one of claims 22 to 24 wherein said elastomer is selected from a terpolymer made from ethylene propylene diene monomer (EPDM)/an ethylene propylene copolymer rubber (EPR).
- 20 26. A process as claimed in any one of claims 22 to 25 wherein said compatibilizer is selected from a group of two different ionomers, styrene-ethylene/butylene-styrene block copolymer (SEBS), styrene-acrylonitrile copolymer (SAN) and polypropylene block copolymer grafted with maleic anhydride (PPBC-g-MAH).
- 25 27. A process as claimed in any one of claims 22 to 26 wherein said polypropylene block copolymer is present in an amount of 50 to 95 wt % of said alloy.
28. A process as claimed in any one of claims 22 to 27 wherein said elastomer is present in a concentration range of 5 to 50 wt %.
29. A process as claimed in any one of claims 22 to 28 wherein said compatibilizer is present in an amount of from 5 to 30 wt %.
- 30 30. A process as claimed in any one of claims 22 to 29 further including a natural filler.
31. A process as claimed in claims 30 wherein said filler is selected from the group consisting of mica, talc and calcium carbonate.

32. A process as claimed in claim 31 wherein said filler is present in the concentration range of from 0-10 wt %.
33. A process as claimed in any one of claims 23 to 32 wherein said extruder temperature is maintain at in the range of 125 to 240⁰C.
- 5 34. A process as claimed in any one of claims 23 to 33 wherein the twin-screw extruder / Buss-co-kneader is operated with the screws rotating at a speed of 50-100 rpm.
35. A process as claimed in any one of claims 22 to 34 wherein the melt blending is carried out at a residence time of 0.5 to 5.0 min.
- 10 36. An article of manufacture whenever made of the polyoelfin alloy as claimed in any one of claims 1 to 21.

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